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design for the present to draw attention to the experience which has been gathered by the Life Assurance Bank of Gotha in vital statistics, and to communicate some essential points from them. These observations will be subjected to a more accurate and detailed scientific treatment when they have acquired greater extension, and furnished richer materials to give them a higher degree of certainty. Not till then will we attempt to construct from them a table of mortality, for which the observations up to the present time, especially respecting the younger and higher ages, have not yet furnished sufficient facts. It would, indeed, be possible to compute a table of mortality founded upon the results above, with the help of certain mathematical methods, but the want of sufficient facts cannot be supplied even by the most skilful mathematical method.

The Prospectuses of the Indian Life Assurance Offices.

[Extracted from No. XXXVII. of the *Calcutta Review*.]

IN a former Number we took occasion to direct attention, in general terms, to the unnecessarily high rates of premium charged for life assurance in India; we propose, in the present article, to present our readers with some further observations on the same subject.

Everybody who is in the habit of reading the newspapers must have been, if not enlightened, at least amused, by the claims to public support put forth in the advertisements of rival Insurance Companies. Ignorance of the theory and practice of life assurance is, even in England, profound and very nearly universal; but here this ignorance is in no small degree aggravated by the obscurity which is supposed to prevail on the subject of European mortality in India, and by the ambiguous and contradictory statements which continually meet our eye in newspapers and on the covers of magazines. Any of our readers who may take up a file of Calcutta newspapers for last month, will find one Company requesting "particular attention to the great advantage offered by them over other institutions of the kind." Another says, their rates have been computed from the records of the India House, and that "no other Office has enjoyed similar advantages in this respect." Going on a little further, we find the secretary of a third Company "happy to undertake details for effecting insurance

and renewing policies, free of commission"—modestly adding, "provided he is kept in funds;" and while just recovering from the admiration into which we are thrown by this disinterested announcement, our attention is attracted by the words, in large characters—"Special Notice!" "Division of Profits!" and we read a solemn admonition from another Company to insure our lives in that Office without delay, "in order to secure the benefit of the present year's entry." What particular "benefit" is to be secured does not appear. In fact, there is no end to the obscurity and mystification on the subject. Here we find one Office claiming support on the grounds of its accumulations, another because it has paid so much money away; while the resources of typography appear to be taxed in no small degree in order that publicity may be given to the announcement which is made by nearly all of them—that their "rates are lower than those of any other Office."

It is very far from our wish or intention to write up any particular Insurance Office; but we believe, that as considerable perplexity must be the fate of any one in this part of the world who, desiring to enter into a life assurance contract, attempts from the announcements of the Companies themselves to ascertain the most eligible Office for his purpose, it has struck us that we should be conferring a boon upon our readers by examining the prospectuses of the different Companies, and ascertaining the simple facts of the case.

It is entirely foreign to the purposes of this article to go into any elaborate disquisition on the origin, principles, &c. of life assurance.* Such a dissertation, possibly not very interesting at any time, would be singularly inappropriate on the present occasion, and at all events would occupy more time and space than is

* The observation, that "all that has hitherto dignified or sweetened human existence—our arts, our letters, our arms, our religion—have come from the shores of the Mediterranean," is true of the useful system of life insurance, the earliest form of which appears to have been originated by one Lorenzo Tonti, a Neapolitan, in 1653. Some writers are, however, of opinion, that the system of marine insurance was in use amongst the Rhodians ten centuries before the Christian era. The oldest Life Insurance Company in England is the Amicable, which was instituted in the reign of Queen Anne. There are now nearly 300 Life Offices in the United Kingdom, the aggregate liabilities of which are estimated at upwards of £160,000,000 sterling, and their annual income from premiums at about £6,000,000 sterling. The most magnificent institution of the kind in the world is the Equitable. Nobody would fancy, on going into the quiet and unpretending office of that Society, in Bridge Street, Blackfriars, that their income in magnitude rivals that of some of the most important of the European States, and that in 1849 their accumulated property amounted to upwards of £8,000,000 sterling.

Of the theory of life assurance, it may be said that its leading principles are very simple. It is based on what is popularly known as the law of average. Say that there are 7,000 officers in the Indian army, it is quite uncertain how long any individual out of that number may live; but the mortality amongst the mass will be found to follow a fixed law. In fact, there are very few things indeed which are subject to less fluctuation

desirable. We shall just take a rapid glance at the premiums which are charged by the different Life Offices, and then indicate what we ourselves consider to be something like the equitable premiums. We shall, in a word, endeavour to show first what people *do* pay in this country for their insurances, and secondly, what we consider they *ought* to pay.

The published tables of premiums for assurance of the lives of Europeans resident in India present themselves under two forms, viz. : those applicable to civil lives, and those applicable to military lives. We learn from the prospectuses that there are also various methods of assuring, by increasing and decreasing scales of premiums, by premiums payable only for a term of years, &c. ; but it will be amply sufficient for present purposes if we bring under observation the rates applicable to each of the above classes, charged for assurance for the whole term of life, with and without profits—a distinction which we will afterwards explain—and for the periods of one and five years. Our readers are no doubt aware that the difference between a “whole life assurance,” as it is technically called, and an assurance for the term of one year, is that in the first case the contract is binding on the Office during the existence of the life insured, and in the second case it absolutely terminates on the expiration of the year. Thus a person insuring on a whole life scale, and paying the premium applicable thereto, can compel the Office to take his premium at the due dates until the end of his life ; but the person who insures for a year only, pays the premium applicable to that period : if he die, the Office has to pay ; but if he live beyond the year, then the underwriters are free from all obligation, and any other insurance on the same life must be an entirely new agreement.

than the average duration of life of large numbers of persons, all similarly circumstanced in regard to social position. But this is not all: curious enough, we find that even moral phenomena are in a great measure subject to this law of average. We can quite understand a physical law pervading the mortality of the human race, because death takes place independent of the will ; but it is not easy to believe that the will, itself free, capricious, and entirely uncontrolled, as in individuals it certainly appears to be, should nevertheless, when large masses of persons are concerned, appear to follow laws as fixed and undeviating as those which control physical phenomena. Yet so it is: men collectively marry, commit crimes, go to law, &c., with the same uniformity as they die, and in some cases with even greater uniformity. We learn, for instance, that there has been less fluctuation between the number of persons yearly accused of crimes in all France from 1826 to 1844, than there has been in the annual mortality in Paris for the same period ; and in England the number of offenders at each age, and the number of particular crimes committed, appear to be reproduced year after year with singular exactness. The practice of insuring the fidelity of servants in situations of trust is now as common in England as that of life insurance. Those who are desirous of further inquiring into this curious subject, we refer to the writings of M. Quetelet in particular, and to some remarkable papers in the *Journal of the Statistical Society* and the *Assurance Magazine*.

Table exhibiting the Premiums for a Short Term Assurance, for the period of One Year.

AGE.	CHURCH OF ENGLAND.		FAMILY ENDOWMENT.		INDIAN LAUDABLE.		MEDICAL, INVALID, AND GENERAL.		NEW ORIENTAL.		UNITED SERVICE.		UNIVERSAL.		AGE.
	Civil.	Military.	Civil.	Military.	Civil.	Military.	Civil.	Military.	Civil.	Military.	Civil.	Military.	Civil.	Military.	
20	Rs. 23	Rs. 32	Rs. 25	Rs. 30	Rs. 28	Rs. 31	Rs. 22	Rs. 24	Rs. 28	Rs. 31	Rs. 28	Rs. 31	Rs. 22	Rs. 26	20
25	26	35	26	31	30	34	27	30	30	34	30	34	24	28	25
30	29	38	28	32	33	38	29	33	33	38	33	38	27	32	30
35	32	41	29	35	37	42	31	34	37	42	37	42	30	35	35
40	36	45	30	38	41	47	33	36	41	47	41	47	32	39	40
45	40	49	33	43	45	53	41	48	45	53	45	53	34	42	45
50	46	56	38	48	50	58	48	53	50	58	50	58	38	45	50
55	55	64	47	54	59	68	53	59	59	68	59	68	44	50	55
60	68	75	56	62	72	84	60	60	72	84	72	84	51	56	60

Table exhibiting the Annual Premiums for a Short Term Assurance, for the period of Five Years.

AGE.	CHURCH OF ENGLAND.		FAMILY ENDOWMENT.		INDIAN LAUDABLE.		MEDICAL, INVALID, AND GENERAL.		NEW ORIENTAL.		UNITED SERVICE.		UNIVERSAL.		AGE.
	Civil.	Military.	Civil.	Military.	Civil.	Military.	Civil.	Military.	Civil.	Military.	Civil.	Military.	Civil.	Military.	
20	Rs. 24	Rs. 33	Rs. 26	Rs. 30	Rs. 29	Rs. 33	Rs. 24	Rs. 27	Rs. 29	Rs. 33	Rs. 29	Rs. 33	Rs. 23	Rs. 28	20
25	28	36	28	31	30	36	28	31	30	36	30	36	25	30	25
30	31	39	30	33	35	40	31	34	35	40	35	40	28	33	30
35	34	42	30	36	39	45	32	35	39	45	39	45	31	37	35
40	37	46	32	40	43	49	37	37	43	49	43	49	32	40	40
45	42	52	35	44	47	55	45	47	55	55	47	55	36	43	45
50	49	58	41	50	54	62	51	51	54	62	54	62	40	47	50
55	59	68	51	57	63	72	56	56	63	72	63	72	48	52	55
60	75	80	64	64	79	90	73	73	79	90	79	90	56	60	60

NOTE.—The Colonial rates for one and five years are not known.

Table exhibiting the Annual Premiums for an Assurance for the Whole Term of Life, with Profits.

Age.	Colonial.		Family Endowment.		Medical, Invalid, and General.		Indian Laudable.		Universal.		Age.
	Civil.	Military.	Civil.	Military.	Civil.	Military.	Civil.	Military.	Civil.	Military.	
20	Ra. 40	Ra. 45	Ra. 33	Ra. 38	Ra. 29	Ra. 35	Ra. 38	Ra. 45	Ra. 42	Ra. 47	20
25	44	48	35	40	33	38	40	48	45	51	25
30	47	52	38	44	36	41	45	53	48	54	30
35	52	57	42	48	43	44	49	58	53	58	35
40	58	62	49	53	48	48	53	63	59	63	40
45	65	69	56	59	54	54	57	68	66	69	45
50	74	78	63	66	59	59	64	76	74	77	50
55	87	89			67	70	73	87	87	89	55
60	103	106			80	82	86	103	103	105	60

Table exhibiting the Annual Premiums for an Assurance for the Whole Term of Life, without Profits.

Age.	CHURCH OF ENGLAND.		FAMILY ENDOWMENT.		MEDICAL, INVALID, AND GENERAL.		NEW ORIENTAL.		UNITED SERVICE.		UNIVERSAL.		Age.
	Civil.	Military.	Civil.	Military.	Civil.	Military.	Civil.	Military.	Civil.	Military.	Civil.	Military.	
20	Ra. 34	Rs. 41	Ra. 31	Rs. 35	Ra. 32	Rs. 38	Ra. 38	Rs. 45	Ra. 32	Rs. 36	Ra. 32	Rs. 36	20
25	38	45	33	38	35	40	40	48	36	41	36	41	25
30	42	49	35	41	33	38	45	53	39	45	39	45	30
35	47	53	39	45	39	41	49	58	43	49	43	49	35
40	53	59	45	49	44	53	53	63	49	53	49	53	40
45	60	66	52	55	50	50	57	68	55	60	55	60	45
50	69	75	59	61	54	64	64	76	64	64	62	64	50
55	82	87	67	69	61	64	73	87	73	76	76	81	55
60	98	101	77	79	73	76	86	103	86	88	88	90	60

NOTE.—There is no mention of profits in the Indian prospectus of the Church of England. The Colonial, without profit rates, are not known. The New Oriental and the United Service, being proprietary Offices, have no "with profit" scale of premiums. The nature of certain returns made by them to policyholders is stated in a subsequent part of this article.

If a person assured on the "whole life" scale do not pay his stipulated premiums at the day when they fall due, then his policy is forfeited, and all his previous payments are lost to him and gained to the Offices. It ought also to be understood, that all Assurance Offices, in granting a policy, charge the premium according to the age of the applicant at his next birthday. Now as people are born at all times throughout the year, and as people effect their insurances at all times throughout the year, it is evident that all the insured are regarded as a little older than they really are; and on an average it may be fairly assumed that, one with another, they are charged as if they were six months older than they really are. The generality of the Offices pay the amount of the policy three months after the death of the assured. These seem to be all the points that require to be explained, in order to render our discussion intelligible to all readers.

We now present a synopsis of the rates charged by the several Life Offices in Calcutta (*see* pp. 18, 19).

It is proper to mention, that prior to 1852 the rates of the Universal were considerably higher than is represented in the two preceding tables, as will appear from the following example of what was formerly charged by that Office:—

AGE.	CIVIL.			MILITARY.		
	One Year.	Five Years.	Whole Life, Without Profits.	One Year.	Five Years.	Whole Life, Without Profits.
20	Rs. 27	Rs. 28	Rs. 38	Rs. 32	Rs. 34	Rs. 42
40	39	40	53	48	50	57
60	63	70	93	69	75	95

The reduction amounts to about twenty per cent. on both civil and military lives for short periods, and to about ten per cent. for the whole term of life without profits.

In the great majority of cases, the policies effected with Life Assurance Companies in this country are on the lives of persons not younger than twenty-five years, or older than forty-five years. It will be convenient, therefore, to exhibit the average yearly rates for the insurance of 1,000 rupees with each Office, at ages from twenty-six to forty-five inclusive; and this information is accordingly supplied by the following table:—

OFFICE.	One Year.		Five Years.		Whole Life, With Profits.		Whole Life, Without Profits.	
	Civil.	MIL.	Civil.	MIL.	Civil.	MIL.	Civil.	MIL.
Church of England ..	Rs. 33	Rs. 41.65	Rs. 34.35	Rs. 43	Rs. ..	Rs. ..	Rs. 48.05	Rs. 54.45
Colonial .....	..	..	..	..	53.3	57.8	..	..
Family Endowment ..	29.15	34.25	31.1	37.1	43.95	48.95	40.8	45.7
Indian Laudable	37.5	42.95	39.15	45.25	49.15	58.5	..	..
Medical, Invalid, and General	32.4	35.35	34.55	36.9	43.2	45.4	39.8	41.8
New Oriental	37.5	42.95	39.15	45.25	..	..	49.15	58.5
United Service	37.5	42.95	39.15	45.25	..	..	49.15	58.5
Universal	29.55	35.3	30.9	36.95	54.4	59.25	45.00	49.35

The first thing that will strike the reader on looking at this and the preceding tables is, that the rates of premium charged by the three local Companies, viz., the New Oriental, the Indian Laudable, and the United Service, on lives resident in India, are precisely the same in every case, and are, with two exceptions, higher on every scale than those of the English Companies. The exceptions are the Colonial and Universal, whose premiums are higher on the profit scale. It should be stated that the Oriental have since 1848 allowed a discount of ten per cent. off their published rates. There is no obligation on them, that we are aware of, to grant this privilege to future or continue it to present policy-holders.

The lowest rates in the table, on the short term scales, are, in the case of civil and military lives for one year, those of the Family Endowment; and civil lives for five years, those of the Universal; on civil and military lives for the whole term of life, and on military lives for five years, the Medical, Invalid and General rates are lower than those of any of the other Companies.

We shall, in due time, examine the nature of certain returns made by some of the Offices noticed, in the shape of "bonuses" and commissions. It is sufficient, for our present purpose, to point out the rate which *the insured by each Office contracts to pay before the Office will issue a policy in his favour*; and the result of our investigations, as to the Indian rates of premium, exhibits some singular anomalies. A glance at the foregoing tables will satisfy any one that there is something which requires to be looked into. Either some Offices charge rates exorbitantly high, or others insure lives at premiums dangerously low.

A very considerable number of assurers in this country, on the scale of premiums applicable to the whole term of life, look forward to continuing their policies in Europe, or in some more genial country, where the diminished risk to life entitles them to a reduction

of premium. We may therefore be allowed a very brief digression from the more immediate purpose of these remarks, as it is of some importance that the English as well as the Indian rates of premiums be previously ascertained by parties before entering into a life assurance contract. It will be seen that, in general, the Offices whose Indian rates are highest are also those whose English rates are highest, although the proportion between English and Indian rates is not uniform. Neither are the periods of residence in England requisite to entitle a policy-holder to be transferred to the English rates the same in all the Offices (*see table, p. 23*).

The Oriental rates for England are obtained by deducting twenty per cent. from the premiums for India. This is a very summary way of settling a difficulty. We notice in the prospectuses of the English Companies, that they generally offer to reduce the premiums to English rates applicable to the age of the assured when his policy was effected, immediately on the life insured returning to Europe to reside permanently. But neither is this quite correct. Actuaries are now generally agreed that, as a rule, increase of risk, caused by residence in India, is compensated by adding three years or so to the individual's age. The Oriental, however, charges the same for a person of twenty as the English Offices do for one of forty-five, nor can we arrive at any notion of their reasons for so doing.

The premiums for India and England then are plain enough.

We shall not at present enter upon the returns afforded by certain of these Companies in the shape of profits, or "bonuses" as they are called, but, having shown what premiums are charged by the Assurance Offices of India—having shown, indeed, in the foregoing tables, *how much money it is necessary to pay* to these Offices before they will undertake certain liabilities—we shall proceed to examine the second proposition with which we originally started.

It may be necessary to premise, that in the construction of the foregoing tables, and indeed all tables of premiums for life assurance, there are generally three elements employed, viz.:—

First. The rate of mortality which may be expected to obtain amongst the lives assured.

Second. The interest which the Office can realize on the contributions of the members.

Third. The additions which are made to the pure mathematical premium, to cover expenses of management.

Table showing the yearly English Rates of Premium, with and without Profits, for the Whole Term of Life.

AGE	CHURCH OF ENGLAND.		COLONIAL.		FAMILY ENDOWMENT.		MEDICAL, INVALID, AND GENERAL.		NEW ORIENTAL.			UNIVERSAL.		AGE
	With Profits.	Without Profits.	With Profits.	Without Profits.	With Profits.	Without Profits.	With Profits.	Without Profits.	Without Profits.		Military.	With Profits.	Without Profits.	
									Civil					
20	£. s. d. 1 17 4	£. s. d. 1 13 11	£. s. d. 1 18 4	£. s. d. 1 15 1	£. s. d. 1 17 9	£. s. d. 1 14 3	£. s. d. 1 17 5	£. s. d. 1 13 7	£. s. d. 3 0 10	£. s. d. 3 12 0	£. s. d. 3 16 10	£. s. d. 1 18 8	£. s. d. 1 14 10	20
25	2 1 6	1 17 9	2 3 3	1 19 8	2 3 1	1 19 1	2 2 1	1 17 8	3 4 0	3 16 10	2 3 3	2 3 3	1 19 0	25
30	2 6 10	2 2 7	2 9 4	2 5 2	2 9 7	2 4 7	2 7 5	2 2 6	3 12 0	4 4 10	2 8 10	2 4 0	2 4 0	30
35	2 13 11	2 9 1	2 16 7	2 11 10	2 16 2	2 11 1	2 14 2	2 8 6	3 18 5	4 12 10	2 14 11	2 9 6	2 9 6	35
40	3 3 6	2 17 8	3 5 6	3 0 0	3 5 9	3 0 3	3 2 10	2 16 3	4 4 10	5 0 10	3 3 0	2 16 9	40	
45	3 16 3	3 9 4	3 17 3	3 10 9	3 16 2	3 9 10	3 14 1	3 6 4	4 11 3	5 8 10	3 12 2	3 5 0	45	
50	4 13 4	4 4 11	4 13 0	4 5 3	4 10 6	4 4 9	4 8 11	3 19 8	5 2 5	6 5 7	4 5 6	3 17 0	50	
55	5 16 5	5 5 10	5 16 0	5 6 4	5 7 6	5 2 5	5 8 9	4 17 5	5 16 10	6 19 3	5 5 10	4 15 3	55	
60	7 7 6	6 14 2	7 7 1	6 14 11	6 7 11	6 2 5	6 15 8	6 1 6	6 17 7	8 4 10	6 13 2	5 19 11	60	

NOTE.—The English rates of the United Service are not known. In the Indian Laidable an insurer, after two years' residence in England, is entitled to one third more of the profits than residents in India: thus, supposing the latter get 30 per cent., the former would be entitled to 40 per cent.

The premiums obtained by the employment of the first two elements mentioned are, we believe, technically called the "pure" or mathematical premiums. The tabular or published rates of the Offices are obtained by adding to this normal premium a percentage which is considered ample enough to cover the expenses of management. Now it is obvious, that to dissect the premiums contained in the foregoing tables, it is first necessary to ascertain what are the mathematical rates of premium applicable to India; and this inquiry involves, as before stated, the mortality amongst Europeans, and the rate at which money improves at compound interest in this country.

Various inquiries have been made at different times into the rate of mortality of certain classes of Europeans in India, with which it is not necessary that we should at present concern ourselves.

The most remarkable attempts* to solve this important and interesting problem are those by the Committee appointed by the Bengal Government, in 1834, to consider the expediency of a Government Life Assurance Institution; by Mr. Woolhouse, the actuary of the National Loan Fund, in 1839; by Mr. Neison, of the Medical Office, in August, 1849; and by Mr. Griffith Davies at various times, his last report having appeared in connection with the Bengal Civil Fund, in June, 1851.

* One of the earliest papers on this subject is that published in the *Gleanings of Science*, a Calcutta periodical now extinct. The article appears in the Number for September, 1831, and is entitled "On the Duration of Life in the Bengal Civil Service." In 1832 Mr. H. T. Prinsep read a paper to the Asiatic Society on "the Mortality of the Bengal Civil Service," which is published in the *Journal* of the Society for July, 1832. In 1836 the "Results of an Inquiry respecting the Law of Mortality for British India," by Major H. B. Henderson," appeared in the *Asiatic Researches*, vol. xx. A paper by Mr. Christie, formerly actuary of the Universal Life Office, was in 1838 read to the Statistical Society, "On the rate of Mortality amongst Officers retired from the Indian Army." This paper is published in the *Journal* of the Society for September of that year. In 1839 Mr. Woolhouse published his "Investigation of Mortality in the Indian Army"—the most remarkable treatise on the subject which had, up to that time, appeared. Mr. Griffith Davies, of the Guardian Office, has at various times reported on certain of the funds of the three presidencies. The most important report, which treats of military lives, is that on the Bengal Military Fund, dated February, 1844.

In 1846 Mr. Curnin, of the Calcutta Mint, constructed a table of mortality of the civil servants who had come on the Bengal establishment since 1779. He also appears to have been about the same time engaged in forming a table applicable to military officers, when death put an end to his labours. In 1849 Mr. Neison completed his report on the Bengal Military Fund. In 1850 Mr. C. S. Francis published "An Investigation of the Rate of Mortality amongst certain Assured Lives in India;" and about the same time Mr. Griffith Davies reported on the Bengal Civil Fund. In February of last year Mr. Jellicoe, Vice-President of the Institute of Actuaries, read a paper to the Institute on the rates of premium for Bengal, which is published in the *Assurance Magazine* for that year. We should also state that Colonel Sykes has made some valuable contributions to vital statistics in India, which are published in the *Journals* of the Statistical Society of London, and that Major Hannington has given considerable attention to the same subject.

The fleeting character of European society in India, unconnected with the covenanted services of the East India Company, has hitherto rendered it exceedingly difficult, if not impossible, to collect sufficient data applicable to that class on which to base any table of mortality. Accordingly, the most important inquiries which have, up to the present time, been made into this question, have had reference to the covenanted civil and military servants of the Company in the three presidencies. From the very limited number of civilians, these investigations, in so far as they are concerned, are not so satisfactory as we could wish. The paper by Mr. Prinsep, referred to below, is founded upon the casualties amongst the 904 civilians who reached Bengal between 1790 and 1831, a period of forty-one years. In 1842 Mr. Davies formed for the Uncovenanted Service Family Pension Fund in Bengal a table of mortality deduced from Messrs. Dodwell and Miles' list of about 1,200 Bengal civil servants, appointed during the period from 1780 to 1838, and he has adopted the same table up to the age of forty in his recent report on the Bengal Civil Fund.*

The following table may be considered interesting, as exhibiting the supposed mortality per cent. per annum amongst the civil service of Bengal, contrasted with the mortality amongst the male population of England and Wales:—†

Age.	England and Wales.	Davies.	Prinsep.	Age.
20—24	·846	1·369	2·032	20—24
25—29	·977	1·591	2·087	25—29
30—34	1·050	1·762	1·795	30—34
35—39	1·137	1·954	2·129	35—39

The above table amounts to this—In Mr. Davies' opinion, of 1,000 Bengal civil servants, all aged exactly twenty years, not more than 861 will complete their twenty-ninth year, and not more than 714 their thirty-ninth year; while in England and Wales, of the same number of males alive at age twenty, 912 will complete their twenty-ninth year, and 817 their thirty-ninth year.

But even supposing these results could be considered as setting at rest the question as to the civil service of India, it is evident that it would be dangerous to insure the very mixed class who

* Since writing the above, we have seen Mr. Neison's report on the same fund, dated 14th December, 1852. The results arrived at are in the highest degree interesting, and amply bear out our own view in several important particulars.

† *Vital Statistics*, p. 5.

present themselves for insurance, at premiums applicable to civil lives, for rates deduced from a table representing the deaths amongst so select a class as the civil service. In all countries the mortality varies considerably in passing from one class to another; and in India especially, East Indians—a term which, by the way, is apparently used in a conventional and not an ethnographical sense, and is analogous to Eurasian, Indo-Briton, &c.—and Europeans in humble circumstances, who are not so well fed and housed as the more affluent residents, and who have not the means of leaving the country for a change of climate when sickness renders it necessary, must be considered as incurring considerably greater risk than others more favourably situated in these respects.

There is another consideration, too, which must not be overlooked, and that is, whether people settling in India at various ages are not subject to greater risk than those who come out young, and thus become acclimated at an early age. It has been conjectured that the mortality is higher in proportion amongst the former class.

An investigation, noticed in No. XXVI. of this *Review*, was some time ago made by Mr. C. F. Francis, of Calcutta, into the experience of two of the oldest local Life Offices in India. The data consisted of the experience of thirty-three years, from 1815 to 1847 inclusive, and comprised 9,541 assurances, of which 2,121 lapsed by death, 5,860 were discontinued, and 1,560 remained in force on the 31st December, 1847. While great praise is due to the gentleman who undertook this difficult and laborious task, it is to be regretted that he did not adopt means to expunge every duplicate policy on the same life. In the case of the Laudable, every duplicate policy appears to have been expunged; but the same accuracy was not observed with the Oriental policies, and besides, parties insured in both Offices were not distinguished. Thus a person might have had three or four policies in the Oriental, and another in the Laudable—than which, indeed, nothing is more common—and his decease would be recorded as four or five deaths, instead of one. It is to be observed, also, that the average duration of the great majority of the policies is not more than three and a half years. Owing to the high rates demanded, it is natural to suppose that those of the insurers who entertained anything like a good opinion of their vitality would abandon their policies as soon as they had served a temporary purpose; and this circumstance, taken in connection with the above, may account in some measure for the extraordinary conclusion at which Mr. Francis

arrives, viz., that the mortality amongst mixed assured lives in India is considerably higher than amongst the Bengal military service according to Mr. Woolhouse's calculation.

We are inclined to believe, with Major Henderson,* that at certain ages, at all events, the army casualties may with the utmost safety be assumed as a criterion of the mortality amongst the mixed class who present themselves to Assurance Offices in this country for insurance at civil rates. It therefore remains that we inquire what is the rate of mortality amongst the officers of the Bengal army.

The data from which the table formed under the auspices of the Committee appointed by Government was deduced, consisted of returns, made by the Adjutants-General of the three presidencies, of the names and ages of all officers who had died year by year at each presidency during the twenty years from 1814 to 1833, as compared with the strength of the respective armies for the twenty years exhibited. Mr. Woolhouse's data consisted of an "alphabetical list of the officers of the Indian army, with the dates of their respective promotion, retirement, resignation, or death, whether in India or in Europe, from the year 1760 to the year 1834 inclusive, corrected to September 1837, compiled and edited by Messrs. Dodwell and Miles, East India army agents;" and Mr. Neison prepared his tables from the records of the India House. It appears that the patronage and other books at the India House record the date of the appointment of each cadet; and with the exception of those struck off, cashiered, or dismissed the service, each cadet continues under observation until his death. From 1799 the age of each officer at entry into the service is given, authenticated by certificate of birth. Mr. Neison extracted from these records, applicable to the period commencing 1st January, 1800, to the 31st December, 1847, the age of each cadet at his appointment; and, with the exception above mentioned, extended his observations over their lives until the end of 1847. There are thus ample data for estimating the mortality amongst officers of the Bengal army. Mr. Woolhouse's observations embrace 6,017 lives, and extend over a period of seventy-six years; and Mr. Neison's embrace 5,199 lives, and extend over a period of forty-eight years.

The following table exhibits the actual mortality per cent. per annum according to Mr. Neison's investigations, as given in Table I. of his report, and the mortality per cent. per annum as computed from Table VI. in Mr. Woolhouse's pamphlet:—

* *Asiatic Researches*, vol. xx., p. 205.

Age.	Woolhouse.	Neison.
18—22	2·670	1·889
23—27	2·757	2·420
28—32	2·910	2·636
33—37	3·147	2·932
38—42	3·446	2·878
43—47	3·815	3·038
48—52	4·263	3·954
53—57	4·930	3·124
58—62	5·941	3·854

We think any one who carefully examines the tables computed under the auspices of the Committee appointed by the Bengal Government, and their elucidation in the early part of Mr. Neison's report on the fund, will come to the conclusion that the greater mortality indicated by Mr. Woolhouse's results above given, as compared with those of Mr. Neison, arises from the former having included the casualties of the last century. A very general impression certainly exists in India, that even within the memory of man a marked and decided improvement has taken place in the duration of life, not only of military officers, but amongst the European population generally. The time was when the English residents in Calcutta used to meet at a certain period of the year, we believe on the 1st of November, for the special purpose of congratulating each other on having survived the dangers of another season; but improved knowledge of the proper means of protection from the climate, and general advancement in medical science, have tended to render this curious ceremony no longer necessary. Undoubtedly regular exercise and temperate living are essential to European life and health in this country. We noticed the other day a remark said to have been made by the late Duke of Wellington on this head, which is so characteristic as to be worth quoting. Here it is: "If people would only practise abstinence, take exercise, and avoid exposure to the midday sun and pestiferous night air, they would find India quite as healthy a residence as England."

If it be true then, as there is every reason to believe, that this improvement has taken place in the value of European life in India within the last thirty or forty years, it is evident that a table of mortality formed from data comprehending the experience of the present century, and brought down as near as possible to our own day, is better adapted than any other to form the basis of the rates of premium necessary for life assurance.

We are aware that Mr. Jellicoe, a distinguished London actuary,

in a paper on this question published in the *Assurance Magazine*, advocates the adoption of Mr. Woolhouse's table, on the ground of security, until the work promised by Mr. Neison, on the general mortality of India, makes its appearance; but we think there can be little doubt that the latter gentleman, having made his own table the basis of the Indian rates of premium, published by the Office with which he is himself immediately connected, will fully justify this important step, when his observations appear, and amply confirm what he has already advanced on the subject.

While it is impossible to lay down any general rule as to the number of observations which will justify an actuary in determining a law of mortality as the basis of tables for life contingencies, we may state as a case in point that the great majority of the English Companies deduce their rates of premium for life assurance in Europe from what is commonly known as the Carlisle Table. Now we are not prepared by any means to admit the sufficiency of the Carlisle observations; but at all events the English rates are chiefly computed from them, and it may be worth while just to glance at the facts which form the basis of that table, as compared with the India House records, comprehending Mr. Neison's data. The Carlisle Table was deduced from a tract entitled *An Abridgement of Observations on the Bills of Mortality in Carlisle, from the year 1779 to the year 1787 inclusive*. It appears scarcely necessary to point out how much more to be relied on are results obtained from observations of 5,199 distinct lives, extending over a period of forty-eight years, than those which comprise the experience amongst a fluctuating population of about 8,000 during a period of nine years.

In examining the comparative merits of the tables of mortality for India which have been hitherto constructed, it must be remembered also that the chance of error in preparing the abstracts was, in the case of Mr. Neison, considerably diminished by his obtaining the particulars from the original records themselves, and not, as in the case of Messrs. Woolhouse and Davies, at secondhand. This, indeed, is rather an important consideration. Dodwell's list was compiled without any view to the construction of life contingency tables—the facts, although said to have been abstracted with great care, were nevertheless tabulated by those who had no experience in such work; while in the other case, the conduct of details was in the hands of men who to careful mathematical training added large experience in such pursuits, and who, it may be supposed, were fully aware of the immediate object for which

the investigation was undertaken. It may be mentioned also that Dodwell's list does not give the ages of cadets on entering the service; and thus, until the last report on the Military Fund appeared, the average age of officers at entry was, by all who had investigated the subject, erroneously assumed to be eighteen years. But the India House books afford certified evidence of the exact age of each cadet on entering the service, and thus Mr. Neison was enabled to show that the average age was nearer seventeen than eighteen years.

Upon the whole, therefore, it appears difficult to resist the conclusion that Table I. of Mr. Neison's report, above referred to, is a fairer basis than any other from which to deduce a scale of premiums for life assurance applicable to European officers of the Bengal army at ages from seventeen to sixty; and that, in the absence of any more satisfactory data, the results may, for the purposes of an Assurance Office, be adopted with the utmost safety, as giving a sufficiently correct idea of the casualties amongst the entire European population in this country at these ages.

The rate of interest is the next consideration. If it be desirable that every one entering into a life assurance contract make himself acquainted with the table of mortality from which the premiums of the Office he proposes to support have been calculated, it is equally important that he learn the rate of interest which has been assumed in their calculations. This will readily appear, if we suppose a person opening two policies with different Offices at the same time, and paying a single premium of 1,000 rupees on each policy, in full of all demands. At the end of fifty years his 1,000 rupees would, at four per cent. per annum compound interest, amount to Rs.7,106-10-5, while, at three per cent., it would amount to only Rs.4,383-14-5. Such Offices, indeed, should not only undertake the equalization of life, but the return of sums paid them at compound interest.

The rate of interest which ought to be assumed in the computation of life premiums is, in many cases, a much more difficult point for the actuary to deal with than that which relates to the prospective mortality of the subscribers. Any sudden and material deterioration in the value of human life is, to say the least, exceedingly unlikely; but extensive and unexpected fluctuations in the rate of interest are continually occurring. Mr. Finlaison, the Government actuary, writing in 1829, says, "I take it for granted, that it will be considered safe enough to assume that money in a long course of years will so accumulate, through all fluctuations, as

to equal a constant rate of four per cent.; because, in fact, money has hitherto accumulated at four and a half per cent., whether we reckon from 1803 or from 1783." Professor De Morgan thinks that the rate assumed should "never be above that at which the Government can borrow;"* and, referring to the English Companies, his opinion is "that no Office would be justified in supposing more than three per cent. with tables which are sufficiently high to come any ways near to the actual experience of mortality."† The general practice with the English Companies using the Carlisle Table is to assume three per cent. in calculating premiums for European lives. It has been the custom hitherto, in the construction of tables for India, to suppose four per cent.; and certainly there appears good reason to believe that money will, for a long time to come, with safety yield at least that rate in this country. Notwithstanding many grave apprehensions in certain quarters to the contrary, we are not afraid that there will be any serious and permanent depreciation in the rate of interest, even assuming that the most profound peace continues to exist in Europe for the next half century—a condition which is, to say the least, exceedingly improbable. We believe that the vast fields for the employment of capital which are being continually opened up in the magnificent colonial possessions of Great Britain will, for a long time, afford ample outlet for any redundancy of wealth which may exist in the mother country.

Considering, however, that we have but an uncertain element after all to deal with, we are willing to give those who differ from us the benefit of any doubt on the subject, and shall, in the table which we propose to institute as a standard of comparison, assume that on an average not more than three and a half per cent. per annum will, with perfect safety, be permanently realized in India.

It is to be observed, that when a Life Office assumes in its calculations that a certain rate of compound interest will be obtained, it proceeds on the supposition that all premiums and interest falling due will be paid at the due date and not later, *and on the same day invested, so as to be made at once productive*; but experience teaches us that this is a condition which is often very far from being complied with. But on the other hand, a Life Office has various sources of profit independent of that which arises from fewer deaths occurring than were expected to take place amongst the members, and the improvement of their funds at a higher rate of interest than is assumed in the tables. For in-

* *Probabilities*, p. 257.

† *Ibid.*, p. 261.

stance, the assurer is always charged the premium applicable to his age as it will be on his next birthday; and thus, one with another, members of a Life Office are six months younger than is supposed in the calculations. Then the interest on investments is convertible half yearly or quarterly, and not yearly, as is supposed in the tables; and it is customary to charge fines for nonpayment of premium within stipulated times, &c. But the most important source of profit, perhaps, arises from policies allowed to lapse from nonpayment of premium. In England, profit from this cause is considerable; but in India the high rates of premium charged by many Offices, and the fact that in a multitude of cases the policies effected are in connection with loans at exorbitant interest, affords some explanation of the circumstance that a very large proportion of the policies are abandoned as soon as they have served their temporary purpose. Thus the average duration of the Oriental policies, it would appear, is under four years; and while in England, of the whole policies effected, not more than one third are discontinued during the lifetime of the parties assured—of 9,541 assurances effected in the Oriental and Laudable together, no less than 5,860 were discontinued, or upwards of three fifths.

Upon the whole, then, while we believe many people would contend, and not unreasonably, that, all things considered, four per cent. is the *minimum* rate which ought to be assumed in computing premiums for assurance in India, and while some would argue that four and a half per cent. could be supposed with perfect safety, we will silence all objection which it is possible to take to this part of our argument by supposing three and a half per cent.; and we now proceed to inquire what premiums will be obtained by the employment of this rate in connection with the mortality which, we concluded, represents what is likely to take place amongst the mixed class of assurers in this country.

It may be convenient for those who do not quite understand the principle of life assurance, if we pause for one moment to illustrate the system by a simple example. Taking the experience of the Laudable and Oriental, and assuming the increase of money at four per cent., we shall suppose that sixteen residents in Calcutta, each of the venerable age of eighty-six years, which is an apt age for illustration, desired to form themselves into a small mutual Assurance Office, and that each member effected an assurance on his life for 1,000 rupees, to be paid at the end of the year in which he shall die. The mathematical rate of premium at that age, payable yearly in advance, is, as near as may be, Rs.490·671.*

* *Rate of Mortality amongst Assured Lives*, p. 38.

Then $16 \times 490\cdot671 =$	Rupees.
Add interest at 4 per cent. for one year	7850·736
	314·029
	8164·765
Deduct claims on 6 deaths, which the table indicates would take place during the first year	6000·
Remains	Rs. 2164·765
Then $10 \times 490\cdot671 =$	4906·71
	7071·475
Add interest at 4 per cent. for one year	282·859
	7354·334
Deduct claims on 5 deaths, which the table indicates would take place during the second year	5000·
Remains	Rs. 2354·334
Then $5 \times 490\cdot671 =$	2453·355
	4807·689
Add interest at 4 per cent. for one year	192·308
	4999·997
Deduct claims on 5 deaths, which the table supposes would take place during the third year	5000·
Balance	Nil.

For at the end of the three years all the lives would be extinct, and the Society, having fulfilled its engagements, would cease to exist. This is a rude enough example, no doubt, but it will serve to show the working of the system. The premiums for assurance, applicable to the different ages, are all calculated on the same plan. It appears that six of the sixteen in the above example pay only Rs.491·671 each, five make two years' payments, or pay Rs.983·842 each, and five pay Rs.1475·013 each; but the representatives of each receive the same stipulated sum of Rs.1,000. In fact, as Mr. De Morgan observes, "in every Office some must pay more than they receive, in order that others may receive more than they pay:" those who have more than an average longevity pay for those who have less.

Mr. Jellicoe, in the paper above mentioned, gives the net yearly premium per cent. computed from a table of mortality formed by him from Table I. in Mr. Neison's report, up to the age of sixty-four, and from Mr. Woolhouse's table from that age to the extremity of life. We now present our readers with the net yearly premiums for assurance of Rs.1,000, as calculated by Mr. Jellicoe, at four per cent. interest, and the premiums at three and a half per cent., which we have computed from the table of mortality formed by him.

Age.	3½ per Cent.			4 per Cent.			Age.
	R.	A.	P.	R.	A.	P.	
20	28	3	11	27	10	7	20
25	30	1	9	29	7	2	25
30	32	4	3	31	8	10	30
35	34	13	9	34	1	3	35
40	38	2	7	37	4	8	40
45	42	7	0	41	8	0	45
50	47	8	6	46	7	9	50
55	54	5	6	53	2	7	55
60	64	6	5	63	1	2	60

We are not aware that there is any fixed rule amongst Insurance Offices as to the amount of addition to be made to the net or mathematical premiums, to cover charges of management, &c. The amount added may be said to vary, according to the table of mortality and the rate of interest supposed in the calculations, from five to twenty-five per cent. We believe it is seldom that a higher addition than ten per cent. is made, unless on the understanding that the assured by that scale are to participate in future profits—or, in other words, that any over-payment which it may afterwards appear they have made will be returned to them. Considering, therefore, that we propose to charge the mass of assurers the rates applicable to military men—that there are, as we have seen, many other sources of profit to Insurance Offices of which people are not generally aware—that we have in the calculation of the premiums in the last table supposed a considerably lower rate of interest than there is reason to expect can be realized—we believe that an addition throughout the whole table of ten per cent. to the above premiums would not only compensate an Office for charges of management, but would, if moderate care and economy were exercised, leave a considerable surplus to be divided amongst the assurers, after all expenses and claims upon the Society were paid.

The following table, then, shows the results at which we have arrived, and exhibits the premiums yearly during life for assurance of 1,000 rupees on the lives of Europeans in India, calculated from the mortality table deduced from Table I. in Mr. Neison's report, with ten per cent. added throughout :—

Age.	Rupees.	Age.	Rupees.
20	31	45	47
25	33	50	52
30	35	55	60
35	38	60	71
40	42		

It will be seen, on a comparison of the above scale with the

rates generally demanded by Insurance Offices, that had we even added twenty instead of ten per cent., our premiums would still have been considerably more moderate than those which are usually charged. Before pointing out certain cases in which the premiums exacted really appear to be unnecessarily, nay, exorbitantly high, it may be necessary to state that there are three forms of constitution under which Life Offices present themselves—there are what are called the “proprietary,” the “mutual,” and the “mixed” Offices. In purely proprietary Companies the insured are guaranteed from all risk, but do not share in profits. In mutual Offices, again, there is joint liability for the fulfilment of engagements, but all profits arising from the business are divided amongst the assured. The mixed Offices, which are by far the most numerous, combine the principles of the other two. Parties insuring with them have the advantage of an entire exemption from liability, and the option of sharing in a portion of the profits besides.

We must leave our readers to determine which of these three systems is the best, as it is not our purpose to discuss their relative merits. We think it, however, only fair to point them out, and also to indicate to what particular class each Indian Office belongs. The Colonial, Church of England, Family Endowment, Medical, and Universal, all combine the mutual and proprietary principles. The Laudable is a mutual Office; and the Oriental and United Service, to all intents and purposes, proprietary. In the case of the Colonial, it is not stated in the prospectus what is the proportion of profit which will be divided amongst the assured, or the periods at which such divisions will be declared. We learn, however, that the first investigation and division will take place in 1854. The Church of England, although not a purely proprietary Company, have no mention of profits in their Indian prospectus. The Family Endowment divides three fourths of the whole profits annually. Parties insured on the profit scale, *and who have paid five complete annual premiums*, will be entitled at the expiration of the fifth year *to a year's profit*, calculated on the average of the preceding five years. In the Medical, profits are ascertained at regular intervals of five years, and an entire two thirds divided amongst the policy-holders on the participating scale. The Universal returns profit to persons assured on the participating scale *who have paid six complete annual or twelve complete half-yearly premiums.**

* The method of division appears complicated, so that we quote it entire:—

“1. The profits are declared in each year on the second Wednesday in May, from which date all persons who may have assured for the whole term of life on the participating scale, and on whose policies six complete annual or twelve complete half-yearly

In the case of the Laudable, profits are ascertained every half year, "and the return premium is available, without exception, to all parties insured in the Society who have paid even a *single* half-year's premium." The profit supposed to have been realized is added to each policy in proportion, but *no reduction of premium for the following half year is made until the accumulations on policies amount to ten per cent. on the sums insured in each case.* In the event, however, of a party deceasing before the accumulations on his policy entitle him to a reduction of premium, the amount of these accumulations, without interest thereon, together of course with the sum assured on his life, are paid. The Oriental, as we stated before, is a purely proprietary Office, but they have been in the habit since November 1848 of allowing a reduction of ten per cent. on the amount of all premiums paid to them. It appears to be within the power of the Office, however, to withdraw this privilege whenever they see fit. The full premium is stated in the policies issued by them. As for the United Service, we have never heard or read of their ever refunding anything. We suppose it is compulsory on parties borrowing money from the Bank of the same name to insure in the Office. At all events, their rates are about the highest in the table, and here is all that is stated about profits:—"The net surplus half-yearly profits will be divided among shareholders according to their respective shares. At the end of five years, only three fourths of such net profits will be so divided, and the remaining one fourth among such policy-holders in the life class as may have been insured therein for the five preceding years, in the proportion of premium paid by them during the relative half year." There is a masterly ambiguity about the passage, which cannot fail to be attractive to intending insurers. We suppose it to mean, that after the unfortunate policy-holder has continued to pay these exorbitant rates for five years, the worthy shareholders, who have all this time been pocketing the difference between what

original premiums have been paid, are entitled to participate in the profits of succeeding years, in either of the modes provided by the deed of settlement, viz., by a reduction of the annual or half-yearly premiums as they fall due, or by an equivalent addition to the sum assured by way of a bonus. Each assurer, on his first becoming entitled to participate in the profits, has the option of selecting either of the foregoing methods, and three months from the date of declaration of the profits is allowed for his making that selection, which, however, when once determined on, cannot be altered in after years.

"2. 'The practice of an annual division,' as observed by Mr. Babbage, 'distributes the profits with more regularity and justice than any other;' and is especially advantageous to persons of advanced years, who cannot hope to participate in many septennial or decennial divisions, as practised by several other Offices.

"3. One fifth of the ascertained profit is divided between the policy-holders and shareholders—three fourths to the former, and one fourth to the latter; the remaining four fifths are set apart to enter into the average to be struck on the next succeeding year."

our friend does pay and what he ought to pay, will graciously reduce his eleventh half-yearly premium to an extent equal to his proportion of one fourth of the *net* profits of the tenth half year, and again will reduce his twenty-first half-yearly premium to an extent equal to his proportion of one fourth of the net profits of the twentieth half year, and so on—in short, will allow him his proportion of one fortieth of the net profits quinquennially, themselves of course appropriating all the rest. This actually appears to be the intention. It is satisfactory to be able to say, that nobody has had the courage to put his name to the prospectus containing this modest proposal. We should like to know how many continue in the “life class” sufficiently long to become entitled to a participation in these signal benefits, since the average duration of the policies in the Laudable, whose premiums are the same as those of the Office in question, and who profess to return the *whole* of the profits half yearly, is under eight years.

It was our intention to have shown, by a simple table, the actual per-centage of excess charged by the Offices brought under observation over the rates which we have instituted as a test; but we shall in mercy to some of them forbear, the more especially as this article has already extended to a greater length than we contemplated, and abounds in tabular matter to a degree which will doubtless have alarmed most of our readers already, and rendered it anything but attractive. Those who are curious to see the extent to which the gentle public have been, and continue to be, fleeced—for we shall still use the word which we employed in touching on this subject before—may ascertain this interesting point by comparing the premiums which we have calculated as a test, with those actually charged by the different Offices, and they will arrive at a tolerably clear idea of the amount per annum on every 1,000 rupees insured. We believe there is no necessity whatever for any Office adding, at the outside, more than 20 per cent. as an addition for contingencies, to the net rates at $3\frac{1}{2}$ per cent.

There is one other point in connection with this subject which it is necessary we should notice; but, for the reason above given, we shall be prevented from discussing it at any great length. Our readers are already aware that the greater number of Life Offices have two scales of premium, one of them being higher than the other, usually called the “participating” scale, which means that the parties who choose to pay the premiums represented thereby will have a share in future profits. This peculiarity is, we fear, not

generally understood. We question, indeed, whether one man out of every hundred who insure their lives precisely understands, on entering into the contract, the exact terms on which he is to participate in profits. Such is the profound ignorance of these matters, that we can fancy a clerk taking down a proposal to dictation, and demanding whether the applicant will insure with profits or without, being answered with a stare of astonishment at such a question, and an "Oh! with profits, certainly"—the person innocently fancying that it is quite optional with him to avail himself of this privilege, and that he can do so without any additional expense. We conceive, therefore, that there are several objections to this system, not the least being that it is generally misunderstood by the parties most interested, but, more especially in the present case, that it *serves in India as a kind of stalking-horse to high rates of premium.* An Office is taxed with charging exorbitant premiums, and it immediately turns round and points triumphantly to the magnitude of its "bonus." "True enough," it is said, "our premiums *are* higher than those of the Offices you mention, but look at the large amount of profits we have returned." But when, we ask, are these profits returned? With one very doubtful exception, not in any case, as the reader will find on looking back a few pages, until the insured has continued to pay the high rates for several years. Supposing he dies, or discontinues his policy in the meantime, what then? Why, all that he has overpaid is lost. It is idle therefore to argue that excessive rates are in every case compensated by returns of profits. Besides, we have never been able to see the necessity of any Insurance Company charging from fifty to sixty per cent. more than all experience and investigation teaches us is sufficient, even although they agree to refund the sum so overpaid within the half year. There is no parallel to such a practice in any other commercial transaction. We suppose it will be received as an axiom, that the nearest approach to perfection, in a scale of premium for life insurance, is attained where, to use the hackneyed phrase of the Offices themselves, "the rates at every age are as low as is consistent with absolute security." We grant that where the nature of the risks to be undertaken is doubtful, or otherwise imperfectly defined, the underwriters are quite justified in—if they must err—erring on the safe side; but, the nature and extent of the risk being precisely known, we cannot help thinking that the Office which, while it affords perfect security for the fulfilment of all engagements, at the same time enables people to insure at the lowest amount of present yearly outlay, is the most desirable Office

for the public to support. It is only reasonable to suppose that every man who, from the nature of his circumstances, is necessitated to insure his life, can find more lucrative employment for all the money he can spare after his insurance is effected than by depositing it with an Office with a view to a reversionary bonus. He has made all necessary provision; and this being done, he can surely find a better use for the rest of his money, by employing it in the prosecution of his own business, than by giving it to an Insurance Office to improve for him.

Participation in future profits is all very well, where the right to this privilege can be obtained without extravagant outlay; and while we do not say of all the Offices in this country that they

. "Keep the word of promise to the ear
And break it to the hope,"

we repeat, that what is generally wanted by those who effect insurance is the absolute guarantee that a certain sum of money will be made good on the death of a particular person, should that event occur even the very next moment after the first premium has been paid; and if we ourselves could obtain that guarantee by the payment to one Company of 1,000 rupees a year, we would on principle consider that method very much preferable to paying 1,500 rupees a year to another Company for the same guarantee, however glowing the promises of future profits in the latter case might be.

It is no remarkable characteristic of Joint Stock Companies, in any part of the world, to refund money where there is no absolute obligation upon them to do so, and we have never heard any one bold enough to assert that the standard of collective morality amongst proprietary bodies in India is higher than it is elsewhere—rather the contrary, in fact; and we ourselves would consider the paying more than is necessary in such cases, in the hope of getting some of it back after the expiry of a term of years, to be rather a dangerous experiment.

But granting that it is necessary to make considerable additions to equitable rates, in order to constitute what is called a "participating" scale, it is worth while to stop and inquire what proportion the additions for this purpose in India bear to similar additions in England.

Now we thought we had done with tabular statements; but we should like to take the Universal Office, and show how much in excess per cent. their "with profit" rates for England are over the net rates, according to the Carlisle Table, and supposing money

to increase at three per cent.; and also the excess per cent. of their Indian rates, with profits, over those we have calculated and consider sufficient. Here is the result:—

ENGLISH RATES.				INDIAN RATES.			
AGE.	Carlisle 3 per Cent. net.	Universal, With Profits.	Excess per Cent. per Ann.	Our own Table, 3½ per Cent. net.	Universal, With Profits.	Excess per Cent. per Ann.	AGE.
	£. s. d.	£. s. d.		R. A. P.	R. A. P.		
20	1 9 10	1 18 8	30	28 3 11	47 0 0	66	20
30	1 19 0	2 8 10	25	32 4 3	54 0 0	67	30
40	2 11 11	3 3 0	21	38 2 7	63 0 0	65	40
50	3 12 5	4 5 6	18	47 8 6	77 0 0	62	50
60	5 15 9	6 13 2	15	64 6 5	105 0 0	63	60

It appears, then, if we add about twenty per cent. to the net Carlisle three per cent. rates, we obtain the “with profit” scale of premiums of the Universal Company of England; but it requires an addition of upwards of sixty per cent. to the net Indian rates to make up the premiums for this country charged by that Office on the profit scale. No wonder that the Committee appointed by Government reported that the insured in this country were “chiefly, or a large portion of them, debtors in the services—men, it may be supposed, improvident in their life and habits.” Who, but those who are compelled to insure, would insure on such terms? No wonder that some of the local Insurance Companies pay dividends to their shareholders at the rate of twenty to forty per cent. for the half year, when they are able to obtain such excessive premiums as these. No wonder that we find the Universal suffering from quite a plethora of wealth from its accumulations in India.

When it is considered that insurers must continue to pay these enormous rates for six years before they become entitled to any return whatever; when we remember that considerably more than three fifths of the policies effected in this country are discontinued by nonpayment of premium, and when we bear in mind that this system has been going on for the last thirty years, our readers will cease to wonder at the magnitude of these accumulations. At the last half-yearly meeting in Calcutta of the Universal Company, if we remember rightly, one gentleman present protested against the subscriptions of the Indian policy-holders being withdrawn to England; while another endeavoured to show—albeit with the most felicitous disregard to mathematical requirements, for the highest powers of the actuary are called into requisition in order to determine what is divisible surplus—endeavoured to show, we say, in

his own way, that at the allocation of profits in 1852 the full amount could not have been divided as provided for by the Company's contract of copartnery: but while we have no doubt, from the high character of the Office and known ability of the actuary, that this is not the case, it seems clear that they have an unnecessarily large sum accumulated, and that this mainly arises from the excessive rates of premium which the policy-holders have for many years been called upon to pay.

We have now done. Our sincere wish has been in these observations to do strict justice to all the Offices concerned, but at the same time to state the simple facts of the case, and leave our readers to draw their own conclusions. We have for a long time been anxious to throw some light on a subject little understood, but of great interest and importance to all. There is no doubt whatever that all the Offices which we have thus ventured to bring under observation are highly respectable; but the terms of some of them require revision, in order to adapt them more to the spirit of the times, and to our increased knowledge of the value of the commodities in which they deal. The local Offices may depend upon it that the tendency of things at present is for English capital to seek an outlet in this country; and unless they modify their regulations, the whole business will pass out of their hands into those of the more enterprising of the English Companies. We have desired to place the terms of the different competing Life Offices on record, because we think the public are bound to support the Offices which lead the way to a more equitable system of things, in preference to those who hereafter may make a virtue of necessity—who, after for years fleecing the public enormously, reduce their terms to a reasonable standard, when they cannot do better—who, in a word, do justice not from principle, but from expediency.

At the same time, there should be no jealous rivalries, but rather a generous emulation, amongst such Companies. In India, alas! from the way in which the system has been abused, the extent of its adoption, instead of being evidence (as it certainly is in England) of frugality and forethought, is rather indicative of recklessness and improvidence; but, based on sound principles and properly conducted, the legitimate object of such Societies is a very good and praiseworthy one. They practically inculcate habits of providence and self-denial, and thus tend to the elevation of the species. If it be true, as Dr. Johnson has asserted, that "whatever makes the future predominate over the present exalts us in the scale of thinking beings," then these Societies ought to be encouraged by

every possible means; nor should those who are actually engaged in assisting their progress indulge in petty squabbles, because some are more successful in the prosecution of this good work than others.

It was our intention to have said a few words on the extension of the life assurance and annuity system to the native population—an enterprise which we have very much at heart, but which is surrounded with difficulties: our space at present will not permit. We would also have liked to say a few words on certain abuses in the practice of marine insurance in Calcutta, but will be prevented for the same reason. The objection to the local Marine Offices is, that they seem to be got up with a view more to the remuneration of the agent than the good of the public and the respective copartneries. We suggest to the shareholders in such Companies that the agents should be paid a commission upon the profits realized, and not upon the gross premiums received.

Since writing the above, we have seen Mr. Neison's Report on the Bengal Civil Fund, dated 14th December, 1852, just received, and it is gratifying to be able to state that it amply confirms our argument in several important particulars. It will be remembered by many of our readers that the Committee appointed by the Civil Fund to examine Mr. Davies' report took exception to it on several grounds, and among others that, deducing as he did his table from *Dodwell's List of Civil Servants*, from 1780 to 1838, he estimated the value of the lives of the members too low. We can quite remember, on seeing Mr. Davies' report, being surprised that he should have considered retired members of the service as subject to a rate of mortality equal to that represented by the Northampton Table, the more especially that he himself, so far back as 1839, in his Report on the Madras Military Fund, alludes to the investigation of Mr. Christie into the casualties amongst retired officers of the military service, elsewhere referred to in this article. It was, we considered, difficult to understand why, if retired soldiers lived much longer than according to Dr. Price's Northampton Table, retired civilians should not enjoy an equal or superior share of longevity to their military brethren. Mr. Neison, as we expected, has at once pointed out this discrepancy in the former Report on the Fund; and while he admits that the results of his own inquiries are corroborative of the justice of Mr. Davies' table up to the age of 40, he considers that the mortality after that age is considerably less than is supposed in Mr. Davies' calculations.

But the most important information for our present purpose in Mr. Neison's report is, that it contains strong additional evidence of a gradual and certain improvement in average European longevity in this country having taken place within the last few years. We think there cannot be a doubt that this is the case. Whatever may be the cause, the fact appears indisputable, and it ought to be a highly important and gratifying one to every Englishman in India. Mr. Neison has, in the construction of his table of mortality for the civil service, availed himself of a Register of the Bengal Civil Servants from 1790 to 1842, compiled by Ramchunder Doss, under direction of Mr. H. T. Prinsep, whose paper on the deaths in the civil service between 1790 to 1831 has been already referred to. This list, it appears, was compiled expressly with a view to the construction of a table of mortality, and has been already used for that purpose by Major Hannyngton; but that gentleman did not arrange his facts so as to show the mortality for each decennary during the entire period. It is in the highest degree important, for many reasons, in investigations of this character, to divide facts into groups of equal size, and compare one group with another. Thus, if we have the facts for every decade of years over a long period, we are able to compare the experience of each decade with the other; and if no very material fluctuations are apparent, it goes to prove that a sufficient number of facts have been collected to form an average. In the present case it is evident that the very magnitude of the experience is an objection to the results which it appears Major Hannyngton and others have arrived at, because they include without distinction the casualties amongst the service at a period when the habits of Europeans in this country were notoriously inimical to long life, and when the hygienic art in India was but very imperfectly understood. Thus we find from the report under notice, that while during the period 1790–1819 the average mortality amongst the Bengal Civil Service, at ages twenty-one to forty, was 1·962 per cent. per annum, it was during the period 1840 to 1842 not more than 1·773 per cent. per annum, showing a difference in favour of increased longevity in later years of ·189 per cent.: that is, supposing the service to consist of 500 members, about one fewer dies every year now than we have reason to believe was the case during an earlier period. This improvement is apparently chiefly owing to the increased longevity of civilians above thirty.

There is one table in Mr. Neison's report so interesting and encouraging, that we shall take the liberty of extracting it entire:—

AGES.	MORTALITY PER CENT.					AGES.
	Glasgow.	Liverpool.	Civil Service.		England and Wales.	
			1790—1842.	1820—1842.		
21 to 25	1·326	1·034	1·876	2·044	0·876	21 to 25
26 „ 30	1·604	1·104	1·960	1·963	0·998	26 „ 30
31 „ 35	1·933	1·374	1·553	1·026	1·063	31 „ 35
36 „ 40	2·318	2·392	2·340	1·403	1·157	36 „ 40
41 „ 45	2·792	2·038	2·951	2·941	1·319	41 „ 45
21 „ 45	1·924	1·479	2·001	1·783	1·072	21 „ 45

We may state that the greater mortality in Glasgow and Liverpool, as contrasted with that of the whole of England and Wales, arises, if we remember rightly, from the number of Irish paupers who cross the channel in search of employment, and locate themselves in the cellars and low lodging-houses, each little family party forming a sort of nucleus of disease. But it is interesting, in even a statistical point of view, to know that the better class of male European residents in this country are actually subject to less risk to life than the aggregate male population of Glasgow, in the proportion of one in every 780. Hitherto, many people, on coming out to India for a few years, have been filled with the most gloomy apprehensions; but the facts before us should have a tendency to dissipate such fears. The question, for so long involved in doubt and obscurity, as to the mortality amongst different classes of Europeans in India, is now pretty well cleared up. To those who have been content to leave their own country, where all the avenues to preferment are choked by eager and struggling competitors, and undergo a voluntary expatriation under the sun of India, in the hope of realizing that independence which is the object of every Englishman's ambition, it must be cheering to know that, with moderate attention to natural laws, they run very little more risk to life than the generality of their countrymen at home; and that, after even a protracted residence in this country, they may return to England and take their place amongst its healthiest inhabitants.

NOTE.—We infer, from the general character of this paper, and particularly from the statement that one of the tables (at page 34) has been computed by the author of it (whether correctly or not we cannot say), that it is the production of an actuary, or at least of a person very conversant with the knowledge of one, and we are therefore the more surprised at the assertion (*see* page 34) that an

addition of ten per cent. to the net premium is a sufficient provision for the extra contingencies arising in an Assurance Company. We are satisfied that not only actuaries, but any reflecting person, will at once demur to such a proposition. In any commercial speculation, the recompense looked for, for the conduct of it and for the risk of capital, is rarely less than ten per cent.; and if we estimate the expenses at five per cent. only—which it will be admitted is a very moderate rate—and make the necessary allowance for ordinary commission merely, the addition, it will be seen, cannot be less than twenty per cent., even in a purely proprietary company, without taking into account the fluctuations so obviously incidental to it. We must protest, too, against the countenance given to the pernicious practice of assuming a rate of interest known to be inaccurate, instead of making every effort to determine the one nearest to the truth, and adopting it. Independently of such a practice being at variance with every sound and scientific principle, the effect of it is, in purely proprietary Companies, to make each contributor pay something more or less than he ought; and, in bonus-giving ones, to affect the returns of surplus in such a manner as greatly to aggravate the injustice, unless (as has been observed), in the multitude of errors thus occasioned, the positive and negative ones, by a fortunate concurrence of circumstances, approximate to something like a balance—a result much to be wished, but scarcely to be looked for with much confidence.—ED. A. M.

NOTES AND QUERIES.

The Money Market.—The operations of the Bank of England in 1853, as regards the rate of interest charged by that establishment, form a useful example of the manner in which the money market of this country is at present regulated. The following table, made up from statements in the *Economist* newspaper, exhibits these operations in a concise shape:—

Date.	Amount of Bullion.	Reserve of Notes.	Securities.	Rate of Interest charged.
18 June, 1853	18,636,000	9,420,000	26,272,000	3½ per cent.
3 Sept., 1853	16,500,000	7,696,000	26,766,000	4 "
17 Sept., 1853	15,862,000	6,977,000	28,716,000	4½ "
1 Oct., 1853	15,612,000	6,258,000	30,911,000	5 , "

If we now compare the amount of cash—that is to say, the notes and bullion—with the securities, we shall find the fluctuation to be as follows:—